C-E-I-R INC.

INSTITUTE FOR ADVANCED TECHNOLOGY 5272 RIVER ROAD ■ WASHINGTON, D. C. 20016 ■ (301) 652-2268 ■ CABLE: CEIR

FOR A PRACTICAL APPROACH TO USE OF NEW
MANAGEMENT PLANNING TECHNIQUES

The Institute for Advanced Technology (IAT), C-E-I-R's educational arm, is now offering a new two-day seminar designed to meet one of the most pressing managerial needs of the present day. As everyone knows, the corporate manager's job has grown ever more complex, what with the increased size of organizations, the accompanying diversity of products and markets and the constant development of new technology embodied in hardware such as the electronic computer.

Fortunately, at the same time, there have been developed new analytical procedures to aid management in its task of ordering a company to reach stated profit goals. One key sector of executive concern is market forecasting and research. Up until a few years ago, even the best forecasting techniques used for marketing purposes were too gross and ignored inter-acting, indirect impact of events which affected the national economy.

With the refinement of the "Input/Output" techniques, however, it has become possible to produce more meaningful estimates for years ahead on markets for specific products, commodities and services, estimates which are geared to various contingencies in the total economic picture. For example: what would be the effect upon your company's market if the war in Viet Nam escalates further? Or if military goods and services take up to 15% of Gross National Product instead of the present 9% to 10%? What would be the effect on your sales if the 6% tax surcharge proposed by President Johnson becomes law? Or if the cost of living continues its steep upward climb?

These are the questions that can be dealt with more realistically through Input/Output. The Input/Output technique has had high-level sponsorship. The most recent official government I-O tables were prepared by the U. S. Department of Commerce. The Bureau of Vital Statistics of the U. S. Department of Labor compiled the first complete I/O "Grid" or tables, almost a decade ago. C-E-I-R, which was among the first organizations to develop such tables for practical commercial use, has now, (in collaboration with FORTUNE Magazine) produced a brand new Input/Output table utilizing up-to-date 1966 figures which describes the interactions of our national economy through 106 separate economic sectors.

How to put this new Input/Output table to effective use for your organization is a principal theme of our forthcoming seminar. In this same two-day session we propose to examine other advanced analytical tools of management planning and forecasting. All these techniques -- Input/Output, Linear Programming, Time Series and Regression

Analysis and others -- are becoming indispensable to progressive management. Our seminar instructors, Mr. Lester Tepper and Mr. Demos Menegakis, are highly experienced and competent in the practical industrial and business applications of these highly specialized -- but broadly applicable -- techniques. Mr. Tepper is vice president - economics for C-E-I-R, and Mr. Menegakis is manager, operations research, at C-E-I-R's New York Center.

We'd like to number you among that group of forward looking managers who are actively exploring, evaluating and using these new techniques. Our forthcoming IAT seminar, to be held at the times and places indicated in the accompanying folder, is an opportunity for you to garner some authoritative information on this important subject. Simply fill out the enclosed reply card and drop it in the mail. Postage is pre-paid. I suggest you act swiftly since our experience has been that these seminars are often over-subscribed at an early date, and we must accept registrants on a first-come, first-served basis.

Sincerely yours,

Robert D. Nixon

Robert D. Nixon
Director

A two-day seminar designed for management personnel desiring an exposure to basic tools of econometrics and operations research, which can serve either as an introductory or refresher course. The seminar will offer exposition, analysis and implementation of the practical planning and forecasting techniques based on the new "computer technology" including the most current Input/Output system available, the **1966 Fortune Input/Output Matrix,** developed by C-E-I-R. Other subjects discussed will be linear programming, regression and time series analysis. Emphasis will be placed by the instructors on how to make these techniques work for you.

Marshall McLuhan, the Canadian professor whose works are having such profound influence, states that the current and near future mode of behavior of the industrial world is characterized by planning, advertising and marketing as opposed to the characterization of the past forty years as being primarily concerned with production. Strategic planning, long range planning, short range planning, are all terms sometimes used synonymously for quantitative decision-making procedures. Such planning is fast becoming an integral function of industrial and government activities. The key, advanced analytical tools utilized in such decision making are the subject matter of this seminar.

For an outline of these courses, or to be placed on the mailing list for seminar announcements, write:

REGISTRAR

Institute for Advanced Technology

C-E-I-R INC

5272 River Road
Washington, D. C. 20016
Phone: Area Code 301/652-2268

REGISTRATION:

Tuition, including course materials and luncheons, is $175 for the first student and $160 for each additional student from the same organization. Checks for tuition should be made payable to C-E-I-R, Inc., Institute for Advanced Technology, 5272 River Road, Washington, D. C. 20016. Classes will begin at 9:00 a.m. and end at 5:00 p.m.

Los Angeles . . . Statler Hilton Hotel
930 Wilshire Boulevard
Los Angeles California 90017
Room Rates: $14.00 Single
$18.00 Twin

New York . . . . . Barbizon-Plaza Hotel
106 Central Park South
New York, New York 10019
Room Rates: $15.00 Single
$22.00 Twin

Cleveland . . . . . Statler Hilton Cleveland
Cleveland, Ohio 44101
Room Rates: $12.00 Single
$18.00 Twin

Chicago . . . . . Knickerbocker Hotel
163 East Walton Place
Chicago, Illinois 60611
Room Rates: $15.00 Single
$19.00 Twin

Each hotel will hold a block of rooms for seminar participants until two weeks before the seminar. Hotel rooms are not included in the tuition but reservation cards are provided by IAT upon registration.

OTHER COURSES:

Among other seminars in the C-E-I-R Program are:

- ☐ Programming Languages
- ☐ Survey of Data Communications
- ☐ Multi-Programmed Operating Systems
- ☐ Time-Sharing Today

C-E-I-R INC.

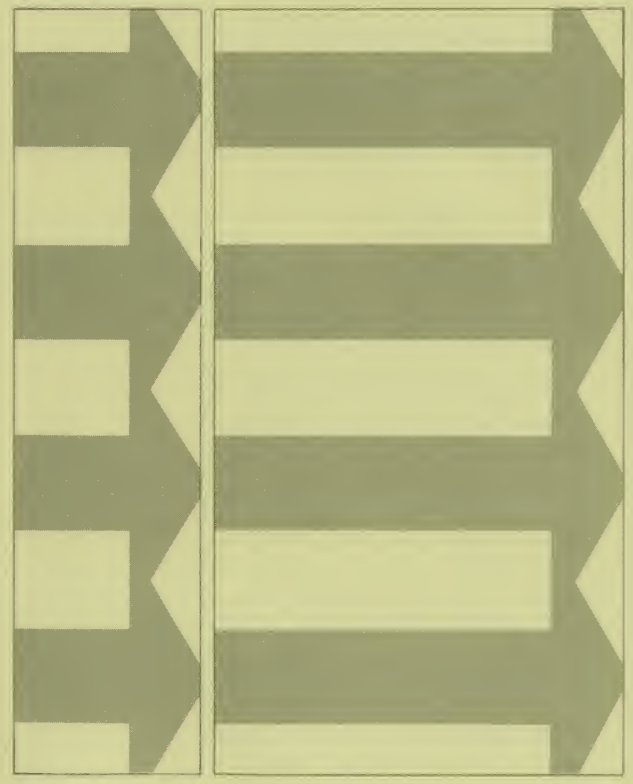
The Practical Utilization Of Input/Output and Related Techniques for Business Planning and Forecasting

SEPTEMBER 11-12, 1967
STATLER HILTON HOTEL, LOS ANGELES, CALIFORNIA

SEPTEMBER 18-19, 1967
BARBIZON-PLAZA HOTEL, NEW YORK, NEW YORK

SEPTEMBER 21-22, 1967
STATLER HILTON CLEVELAND, CLEVELAND, OHIO

SEPTEMBER 27-28, 1967
KNICKERBOCKER HOTEL, CHICAGO, ILLINOIS



Course Outline

INTRODUCTION
- Planning Models
- Long and Short Range Planning
- Simulation Models
- Measures of Economic Activity
- Data Sources
- Information Systems

INPUT/OUTPUT ANALYSIS
- The **Fortune** 1966 Input/Output Matrix
- Concepts, Structure, Conventions
- State of the Art from Leontief to Fortune's 1966 Input/Output Matrix
- The National Income and Product Accounts
- The Data Classification System
- GNP, Bill of Goods, Value Added, Final Demand, Gross Output
- Inter-industry Relationships
- Technological Coefficients
- Open and Closed Input/Output Systems
- Industry Output Requirements and Markets Generated
- Industry Production Requirements—Capacity Balance
- Short-Term Industry Forecasts and Long-Range Planning and Investment
- Employment, Price, Capital and Import Implications
- Applications to National, Regional and Local Economic and Industrial Analysis

LINEAR PROGRAMMING
- Concepts, Structure, Uses
- Data Manipulation
- The Role of the Computer and its Practical Application
- The State of the Art from Dantzig to Quadratic Programming
- Vectors, Constraints, Resources, Activities, Objectives, Shadow Prices
- Corporate and Regional Models
- Applications in Product Mix, Production Planning and Scheduling, Capital Budgeting, Material Flow
- Relationship between Input/Output Analysis and Linear Programming

FORECASTING
- Time Series Analysis
- Regression and Correlation Analysis
- Exponential Smoothing
- Simulation

SUMMARY
- Relationships of Techniques Discussed
- General Discussion

Instructor

Demosthenes Menegakis is C-E-I-R's manager for operations research. He has participated in a wide variety of operations research, econometrics and systems analysis projects. He was project director for the recently-completed 1966 Input/Output Study of the U.S. economy performed by C-E-I-R for Fortune Magazine. An assistant professor of engineering Economics at New York University, he received his B.S. from Roberts College and M.S. degrees from Rensselaer Polytechnical Institute and Columbia University, the latter in Operations Research and has pursued advanced graduate work at Massachusetts Institute of Technology.

The Practical Utilization Of Input/Output and Related Techniques for Business Planning and Forecasting

INPUT/OUTPUT ANALYSIS is a powerful and versatile planning tool designed to assist business executives and market development analysts in reaching decisions on complex business problems by supplying more complete and consistent quantitative aids to judgment. The structure of the national I-O model is of particular interest to corporate planners because it traces and measures the interrelationships and interacting impacts of all identifiable industrial sectors of the U.S. economy. An updated I-O model in current price terms, as represented by the Fortune 1966 Input/Output Matrix, can be applied directly or readily adapted to serve as a powerful tool for simulation and business forecasting in identifying, measuring and assessing industry as well as individual company market potentials and capacity requirements, both near-term and long run, consistent with any specified changes in the level and "mix" of GNP (Gross National Product). This makes it possible for the business planner or marketing analyst (on a rapid, consistent and economic basis) to test and measure the total direct plus indirect industry impacts generated by any projections, forecasts or hypotheses of new or shifting consumer demand, other GNP changes in government, business investment or private expenditures, or technological changes on those producing or marketing sectors in which he is particularly interested.

LINEAR PROGRAMMING is another management planning tool suitable for short range decision making. Once a mathematical model of a business problem has been formulated properly, linear programming will manipulate all variable and provide an optimal solution for the activity levels of the variables concerned. As an example, LP, if properly structured, can find the proper combination of goods to be produced, which makes the best use of available productive facilities, and yet at the same time, meet all competing demands and maximize profits. The LP user may vary the availabilities of resources, change prices and demands, vary the interactions and find the effects on profits or other important criteria.

The other forecasting techniques covered in this course can be used as analytical tools on their own merit or as subordinate techniques to provide data for such higher order models as input/output or linear programming. For example, time series or regressive models may be used to make projections of certain final demand components to be used in an input/output analysis. Or, a regression model may be used to estimate demand of a product which may be necessary information for an LP solution of a production planning model.

SIMULATION TECHNIQUES are generally used whenever it is impossible or difficult to solve a given planning problem deterministically. Typical problems where these tools are applied will be described and the results appraised.

COURSE MATERIAL: Each student will receive a portfolio of text and tabular materials on Fortune's 1966 Input/Output Matrix, plus computer generated output for a simple, but realistic, problem demonstrating practical applications for each of the techniques outlined. The results will be analyzed and discussed. Emphasis will be on applications, concepts and decision models, with concentration on how to use and read the "clock" rather than on the detail of how the inner mechanism runs. In this context, the role of the mathematics of the models is treated briefly as a "mechanism" and the processing as a "black-box."

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MANAGEMENT PLANNING AND
CONTROL OF PROJECT SITUATIONS

Dear Sirs:

The three day seminar, ADVANCED PROJECT PLANNING AND CONTROL SYSTEMS, is a comprehensive introduction to the advanced concepts of management planning and control for project situations. It focuses on processes surrounding the manager, his project, his organization and his planning and control mechanisms. From this point, the presentation will develop the need, design, operation and results of many new and powerful techniques that can be utilized to increase the effectiveness of management planning and control.

Among the techniques to be discussed are integrated information systems, network systems, time/cost optimization, performance evaluation mechanisms, resource allocation, multi-project systems, enterprise simulations and many others.

The course is taught by Mr. Raymond Wenig, who is an expert in the design, development and implementation of project information and control systems. His views and experience on these systems are based on a history of operational use and a close association with project responsibilities. Mr. Wenig's presentation will follow a pragmatic orientation and will include a wide variety of operational examples.

The strong emphasis placed on using these advanced techniques will permit you to receive both an introduction to their method and a feel for their operation and effect in an organization. In addition, a number of workshop examples will give you simulated experience with the techniques.

Some of the concepts to be covered in this course are new and several of them are still in early stages of operation. It is expected that you will come prepared to participate in an open discussion on how some of these systems will effect an organization, particularly yours.

At the end of this course, you will have a new feel for where you as a manager fit in the project planning and control process. You will also have a comprehensive introduction to new and fruitful techniques that you can use to improve your managerial skills and performance. In addition, you should be able to formulate and implement some of the important aspects of these techniques directly into areas of your responsibility.

Registration at each session will be limited, please phone or mail your registration today.

Sincerely yours,

Robert D. Nixon
Director

C-E-I-R is an international applied research and data processing corporation that offers analytical, scientific and computer services to business, science and government. Founded in 1954, it is today the world's largest, most experienced and best equipped independent organization in its field. The C-E-I-R professional staff includes several hundred mathematicians, statisticians, economists, operations researchers, management scientists and others from a variety of disciplines. In addition, many of the finest scientific and professional men in America are retained on a consultant basis. Augmenting this professional capability are modern electronic computing equipment, and skilled computer programmers and operations personnel at computing centers in five major U.S. cities, The Hague, Mexico City, and London.

IAT Institute for Advanced Technology is the latest expression of C-E-I-R's long-standing involvement in management education. The revolutionary nature of computer-based methods made education an integral part of C-E-I-R operations from the beginning. This relationship is formalized through the Institute for Advanced Technology. IAT faculty members are drawn primarily from the ranks of C-E-I-R's professional and computer operations staffs. Its curriculum is drawn from subjects in which C-E-I-R staff members are expert—recognized for excellence in day-to-day application of the art and science of computer usage to the real problems of C-E-I-R customers in business and industry. Sharing these new skills through seminars in major cities, management clinics, and special, inplant training programs is the major goal of the Institute for Advanced Technology.

REGISTRATION:

Tuition, including course materials and luncheons, is $195 for the first students and $175 for others from the same organization. Checks for tuition should be made payable to C-E-I-R, Inc., Institute for Advanced Technology. Classes will begin at 9:00 a.m. and end at 5:00 p.m.

HOTEL ACCOMMODATIONS:

The seminar will be presented at the Mayflower Hotel, 1127 Connecticut Avenue, N.W., Washington, D. C. The Mayflower is holding a block of single rooms for seminar participants at $17 single and $22 double rooms until two weeks before the seminar. Hotel rooms are not included in the tuition but reservation cards are provided by IAT upon registration. Parking facilities are available.

OTHER COURSES:

Among other seminars in the C-E-I-R Program are:

- ☐ Survey of Data Communications
- ☐ Programming Languages
- ☐ Time-Sharing Today
- ☐ Document Retrieval & Display Techniques

For an outline of these courses, or to be placed on the mailing list for seminar announcements, write:

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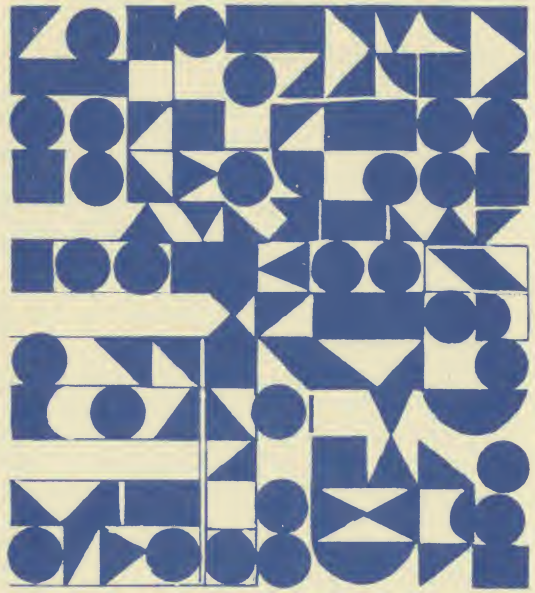
ADVANCED PROJECT PLANNING AND CONTROL SYSTEMS

SEPTEMBER 11-13 AND OCTOBER 18-20, 1967
THE MAYFLOWER HOTEL, WASHINGTON, D. C.



C-E-I-R INC.

Course Outline

PROJECT PLANNING

☐ The Planning Process ☐ Management responsibilities ☐ Determining project requirements ☐ Constructing summary plans ☐ Developing detail plans ☐ Forecasting future events ☐ Evaluating management plans ☐ Improving the planning process

REPRESENTATION OF PROJECT PLANS

☐ Objectives of Plan representations ☐ Blocked time charts ☐ Work Sequence displays ☐ Analog models ☐ Integrated network displays ☐ Project Simulation models ☐ Organization models ☐ Future representation methods

PROJECT ESTIMATING

☐ The estimating process ☐ Estimating project time requirements ☐ Segregating major time objectives ☐ Determining detail level time estimates ☐ Developing resource and cost requirements ☐ Evaluating time, cost and resource estimates ☐ Estimating work priorities ☐ Revising estimates ☐ Pinpointing responsibility for estimates ☐ Improving the estimating process

PROJECT PLANNING INFORMATION

☐ Generating Project time, cost and resource plan reports ☐ Reviewing types of project information ☐ Utilizing planning information ☐ Measuring plans versus objectives ☐ Modifying plans ☐ Simulating decision alternatives ☐ Improving planning information

PROJECT SCHEDULING

☐ The scheduling process ☐ Requirements for scheduling ☐ Setting work schedules ☐ Considering limited resources ☐ Allocating resources on a priority criteria ☐ Evaluating overall effects of schedules ☐ Making scheduling decisions ☐ Revising schedules ☐ Improving the scheduling process

PROJECT SCHEDULING INFORMATION

☐ Producing schedule reports ☐ Review of types of scheduling information ☐ Analysis of schedules ☐ Evaluating alternative schedules ☐ Measuring scheduling conflicts ☐ Simulating schedule revisions ☐ Setting work schedules

PROJECT CONTROL

☐ Monitoring actual work ☐ Collecting actual time, cost, and resource expenditures ☐ Developing pertinent project information ☐ Reviewing project status ☐ Identifying project problems ☐ Analyzing project problems in detail ☐ Constructing alternative decisions ☐ Evaluating possible decisions ☐ Selecting and implementing appropriate decisions ☐ Measuring information feedback ☐ The project control cycle ☐ Improving Project Control

PROJECT PLANNING AND CONTROL SYSTEMS

☐ Review of operational systems ☐ Choosing an appropriate system ☐ Mating a system to the organization ☐ Implementing the system ☐ Operating trials ☐ Adjusting the system ☐ Keeping the system dynamic ☐ Improving the system

MANAGEMENT OF A PROJECT PLANNING AND CONTROL SYSTEM

☐ Establishing system requirements ☐ Objectives of systems management ☐ Staffing the operating group ☐ Training participants ☐ Determining operating procedures ☐ Automating segments of the system ☐ Linking the proposed system to the current organization

OPERATIONAL USE OF PROJECT PLANNING AND CONTROL SYSTEMS

☐ Operating examples ☐ Potential problem areas ☐ Overcoming organizational resistance ☐ Tuning the system to the organization ☐ Long range systems improvement ☐ Future advances in project planning and control systems

INTEGRATED ORGANIZATIONAL SYSTEMS

☐ Other operational systems within an organization ☐ Linking internal systems together ☐ Automating total systems ☐ Projecting organizational trends ☐ Staying abreast of changes ☐ Survey of peripheral catalysts ☐ A look at the future

Instructor

Mr. Raymond P. Wenig is manager of Scientific and Professional Services Group at C-E-I-R's research and data processing center in Boston. His work in the PERT/CPM field includes system development and implementation, consulting with engineering and management personnel on reporting and scheduling techniques, and co-authorship of the text, "PERT/Cost: Principles, Concepts and Applications." Mr. Wenig is experienced in applications of linear programming to such areas as production facility allocation, use of time series analysis, industrial dynamics and management simulations, and in computer programming for scientific and engineering applications. He is a graduate of the Massachusetts Institute of Technology.

An advanced seminar for all levels of technical and administrative management with project planning and control responsibility. Data processing and systems personnel interested in project work will also benefit from this course. The major subject of the seminar is the development, dissemination and utilization of appropriate project information. The manager's role in the project planning, scheduling and control processes are reviewed in depth. New management techniques are covered to bring these processes under better control.

Techniques to be covered involve network methods, time/cost tradeoffs, resource allocation, multi-project systems and several others. These techniques will be discussed from a manual and computerized form of operation. Familiarity with project situations is desirable.